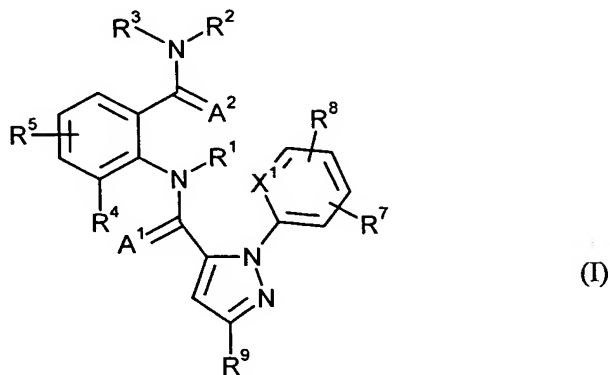


Claims

1. A composition comprising a synergistically effective active compound combination of anthranilamides of the formula (I)



in which

A¹ and A² independently of one another represent oxygen or sulfur,

X¹ represents N or CR¹⁰,

R¹ represents hydrogen or represents C₁-C₆-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl or C₃-C₆-cycloalkyl, each of which is optionally mono- or polysubstituted, where the substituents independently of one another may be selected from the group consisting of R⁶, halogen, cyano, nitro, hydroxyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₂-C₄-alkoxycarbonyl, C₁-C₄-alkylamino, C₂-C₈-dialkylamino, C₃-C₆-cycloalkylamino, (C₁-C₄-alkyl)-C₃-C₆-cycloalkylamino and R¹¹,

R² represents hydrogen, C₁-C₆-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl, C₃-C₆-cycloalkyl, C₁-C₄-alkoxy, C₁-C₄-alkylamino, C₂-C₈-dialkylamino, C₃-C₆-cycloalkylamino, C₂-C₆-alkoxycarbonyl or C₂-C₆-alkylcarbonyl,

R³ represents hydrogen, R¹¹ or represents C₁-C₆-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl, C₃-C₆-cycloalkyl, each of which is optionally mono- or polysubstituted, where the substituents independently of one another may be selected from the group consisting of R⁶, halogen, cyano, nitro, hydroxyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₂-C₆-alkoxycarbonyl, C₂-C₆-alkylcarbonyl, C₃-C₆-trialkylsilyl, R¹¹, phenyl, phenoxy and a 5- or 6-membered heteroaromatic ring, where each phenyl, phenoxy and 5- or 6-membered heteroaromatic ring may optionally be substituted and where the substituents independently of one another may be selected from one to three radicals W or one or more radicals R¹², or

R² and R³ may be attached to one another and form the ring M,

- 5 R^4 represents hydrogen, C_1 - C_6 -alkyl, C_2 - C_6 -alkenyl, C_2 - C_6 -alkynyl, C_3 - C_6 -cycloalkyl, C_1 - C_6 -haloalkyl, C_2 - C_6 -haloalkenyl, C_2 - C_6 -haloalkynyl, C_3 - C_6 -halocycloalkyl, halogen, cyano, nitro, hydroxyl, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -haloalkylthio, C_1 - C_4 -haloalkylsulfinyl, C_1 - C_4 -haloalkylsulfonyl, C_1 - C_4 -alkylamino, C_2 - C_8 -dialkylamino, C_3 - C_6 -cycloalkylamino, C_3 - C_6 -trialkylsilyl or represents phenyl, benzyl or phenoxy, each of which is optionally mono- or polysubstituted, where the substituents independently of one another may be selected from the group consisting of C_1 - C_4 -alkyl, C_2 - C_4 -alkenyl, C_2 - C_4 -alkynyl, C_3 - C_6 -cycloalkyl, C_1 - C_4 -haloalkyl, C_2 - C_4 -haloalkenyl, C_2 - C_4 -haloalkynyl, C_3 - C_6 -halocycloalkyl, halogen, cyano, nitro, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -alkylamino, C_2 - C_8 -dialkylamino, C_3 - C_6 -cycloalkylamino, C_3 - C_6 -(alkyl)cycloalkylamino, C_2 - C_4 -alkylcarbonyl, C_2 - C_6 -alkoxycarbonyl, C_2 - C_6 -alkylaminocarbonyl, C_3 - C_8 -dialkylaminocarbonyl and C_3 - C_6 -trialkylsilyl,
- 10 R^5 and R^8 in each case independently of one another represent hydrogen, halogen or represent in each case optionally substituted C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl, R^{12} , G, J, -OJ, -OG, -S(O)_p-J, -S(O)_p-G, -S(O)_p-phenyl, where the substituents independently of one another may be selected from one to three radicals W or from the group consisting of R^{12} , C_1 - C_{10} -alkyl, C_2 - C_6 -alkenyl, C_2 - C_6 -alkynyl, C_1 - C_4 -alkoxy and C_1 - C_4 -alkylthio,
- 15 where each substituent may be substituted by one or more substituents independently of one another selected from the group consisting of G, J, R^6 , halogen, cyano, nitro, amino, hydroxyl, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -haloalkylthio, C_1 - C_4 -haloalkylsulfinyl, C_1 - C_4 -haloalkylsulfonyl, C_1 - C_4 -alkylamino, C_2 - C_8 -dialkylamino, C_3 - C_6 -trialkylsilyl, phenyl and phenoxy, where each phenyl or phenoxy ring may optionally be substituted and where the substituents independently of one another may be selected from one to three radicals W or one or more radicals R^{12} ,
- 20 G in each case independently of one another represents a 5- or 6-membered non-aromatic carbocyclic or heterocyclic ring which may optionally contain one or two ring members from the group consisting of C(=O), SO and S(=O)₂ and which may optionally be substituted by one to four substituents independently of one another selected from the group consisting of C_1 - C_2 -alkyl, halogen, cyano, nitro and C_1 - C_2 -alkoxy, or independently of one another represents C_2 - C_6 -alkenyl, C_2 - C_6 -alkynyl, C_3 - C_7 -cycloalkyl, (cyano)- C_3 - C_7 -cycloalkyl, (C_1 - C_4 -alkyl)- C_3 - C_6 -cycloalkyl, (C_3 - C_6 -cycloalkyl)- C_1 - C_4 -alkyl, where each cycloalkyl, (alkyl)cycloalkyl and (cycloalkyl)-alkyl may optionally be substituted by one or more halogen atoms,
- 25
- 30
- 35

- J in each case independently of one another represents an optionally substituted 5- or 6-membered heteroaromatic ring, where the substituents independently of one another may be selected from one to three radicals W or one or more radicals R¹²,
- 5 R⁶ independently of one another represents -C(=E¹)R¹⁹, -LC(=E¹)R¹⁹, -C(=E¹)LR¹⁹, -LC(=E¹)LR¹⁹, -OP(=Q)(OR¹⁹)₂, -SO₂LR¹⁸ or -LSO₂LR¹⁹, where each E¹ independently of one another represents O, S, N-R¹⁵, N-OR¹⁵, N-N(R¹⁵)₂, N-S=O, N-CN or N-NO₂,
- 10 R⁷ represents hydrogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, halogen, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₁-C₄-haloalkylthio, C₁-C₄-haloalkylsulfinyl, C₁-C₄-haloalkylsulfonyl,
- R⁹ represents C₁-C₄-haloalkyl, C₁-C₄-haloalkoxy, C₁-C₄-haloalkylsulfinyl or halogen,
- R¹⁰ represents hydrogen, C₁-C₄-alkyl, C₁-C₄-haloalkyl, halogen, cyano or C₁-C₄-haloalkoxy,
- 15 R¹¹ in each case independently of one another represents in each case optionally mono- to trisubstituted C₁-C₆-alkylthio, C₁-C₆-alkylsulfenyl, C₁-C₆-haloalkylthio, C₁-C₆-haloalkylsulfenyl, phenylthio or phenylsulfenyl, where the substituents independently of one another may be selected from the list W, -S(O)_nN(R¹⁶)₂, -C(=O)R¹³, -L(C=O)R¹⁴, -S(C=O)LR¹⁴, -C(=O)LR¹³, -S(O)_nNR¹³C(=O)R¹³, -S(O)_nNR¹³C(=O)LR¹⁴ or -S(O)_nNR¹³S(O)₂LR¹⁴,
- 20 L in each case independently of one another represents O, NR¹⁸ or S,
- R¹² in each case independently of one another represents -B(OR¹⁷)₂, amino, SH, thiocyanato, C₃-C₈-trialkylsilyloxy, C₁-C₄-alkyl disulfides, -SF₅, -C(=E¹)R¹⁹, -LC(=E¹)R¹⁹, -C(=E¹)LR¹⁹, -LC(=E¹)LR¹⁹, -OP(=Q)(OR¹⁹)₂, -SO₂LR¹⁹ or -LSO₂LR¹⁹,
- 25 Q represents O or S,
- R¹³ in each case independently of one another represents hydrogen or represents in each case optionally mono- or polysubstituted C₁-C₆-alkyl, C₂-C₆-alkenyl, C₂-C₆-alkynyl or C₃-C₆-cycloalkyl, where the substituents independently of one another may be selected from the group consisting of R⁶, halogen, cyano, nitro, hydroxyl, C₁-C₄-alkoxy, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₁-C₄-alkylamino, C₂-C₈-dialkylamino, C₃-C₆-cycloalkylamino or (C₁-C₄-alkyl)-C₃-C₆-cycloalkylamino,
- 30 R¹⁴ in each case independently of one another represents in each case optionally mono- or polysubstituted C₁-C₂₀-alkyl, C₂-C₂₀-alkenyl, C₂-C₂₀-alkynyl or C₃-C₆-cycloalkyl, where the substituents independently of one another may be selected from the group consisting of R⁶, halogen, cyano, nitro, hydroxyl, C₁-C₄-alkoxy, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₁-C₄-alkylamino, C₂-C₈-dialkylamino, C₃-C₆-cycloalkylamino and (C₁-C₄-alkyl)-C₃-C₆-cycloalkylamino or represent optionally substituted phenyl,
- 35

where the substituents independently of one another may be selected from one to three radicals W or one or more radicals R^{12} ,

R^{15} in each case independently of one another represents hydrogen or represents in each case optionally mono- or polysubstituted C_1 - C_6 -haloalkyl or C_1 - C_6 -alkyl, where the substituents independently of one another may be selected from the group consisting of cyano, nitro, hydroxyl, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -haloalkylthio, C_1 - C_4 -haloalkylsulfinyl, C_1 - C_4 -haloalkylsulfonyl, C_1 - C_4 -alkylamino, C_2 - C_8 -dialkylamino, C_2 - C_6 -alkoxycarbonyl, C_2 - C_6 -alkylcarbonyl, C_3 - C_6 -trialkylsilyl and optionally substituted phenyl, where the substituents independently of one another may be selected from one to three radicals W or one or more radicals R^{12} , or $N(R^{15})_2$ represents a cycle which forms the ring M,

R^{16} represents C_1 - C_{12} -alkyl or C_1 - C_{12} -haloalkyl, or $N(R^{16})_2$ represents a cycle which forms the ring M,

R^{17} in each case independently of one another represents hydrogen or C_1 - C_4 -alkyl, or $B(OR^{17})_2$ represents a ring in which the two oxygen atoms are attached via a chain having two to three carbon atoms which are optionally substituted by one or two substituents independently of one another selected from the group consisting of methyl and C_2 - C_6 -alkoxycarbonyl,

R^{18} in each case independently of one another represents hydrogen, C_1 - C_6 -alkyl or C_1 - C_6 -haloalkyl, or $N(R^{13})(R^{18})$ represents a cycle which forms the ring M,

R^{19} in each case independently of one another represents hydrogen or represents in each case mono- or polysubstituted C_1 - C_6 -alkyl, where the substituents independently of one another may be selected from the group consisting of cyano, nitro, hydroxyl, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -haloalkylthio, C_1 - C_4 -haloalkylsulfinyl, C_1 - C_4 -haloalkylsulfonyl, C_1 - C_4 -alkylamino, C_2 - C_8 -dialkylamino, CO_2H , C_2 - C_6 -alkoxycarbonyl, C_2 - C_6 -alkylcarbonyl, C_3 - C_6 -trialkylsilyl and optionally substituted phenyl, where the substituents independently of one another may be selected from one to three radicals W, C_1 - C_6 -haloalkyl, C_3 - C_6 -cycloalkyl or phenyl or pyridyl, each of which is optionally mono- to trisubstituted by W,

M in each case represents an optionally mono- to tetrasubstituted ring which, in addition to the nitrogen atom attached to the substituent pair R^{13} and R^{18} , $(R^{15})_2$ or $(R^{16})_2$, contains two to six carbon atoms and optionally additionally a further nitrogen, sulfur or oxygen atom, where the substituents independently of one another may be

selected from the group consisting of C₁-C₂-alkyl, halogen, cyano, nitro and C₁-C₂-alkoxy,

W in each case independently of one another represents C₁-C₄-alkyl, C₂-C₄-alkenyl, C₂-C₄-alkynyl, C₃-C₆-cycloalkyl, C₁-C₄-haloalkyl, C₂-C₄-haloalkenyl, C₂-C₄-haloalkynyl, C₃-C₆-halocycloalkyl, halogen, cyano, nitro, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulfinyl, C₁-C₄-alkylsulfonyl, C₁-C₄-alkylamino, C₂-C₈-dialkylamino, C₃-C₆-cycloalkylamino, (C₁-C₄-alkyl)-C₃-C₆-cycloalkylamino, C₂-C₄-alkylcarbonyl, C₂-C₆-alkoxycarbonyl, CO₂H, C₂-C₆-alkylaminocarbonyl, C₃-C₈-dialkylaminocarbonyl or C₃-C₆-trialkylsilyl,

10 n in each case independently of one another represents 0 or 1,

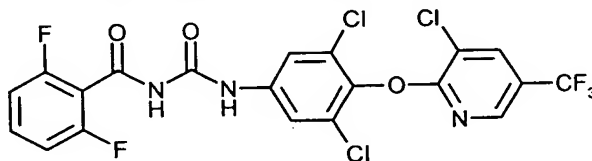
p in each case independently of one another represents 0, 1 or 2,

where, if (a) R⁵ represents hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₂-C₆-haloalkenyl, C₂-C₆-haloalkynyl, C₁-C₄-haloalkoxy, C₁-C₄-haloalkylthio or halogen and (b) R⁸ represents hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₂-C₆-haloalkenyl, C₂-C₆-haloalkynyl, C₁-C₄-haloalkoxy, C₁-C₄-haloalkylthio, halogen, C₂-C₄-alkylcarbonyl, C₂-C₆-alkoxycarbonyl, C₂-C₆-alkylaminocarbonyl or C₃-C₈-dialkylaminocarbonyl, (c) at least one substituent selected from the group consisting of R⁶, R¹¹ and R¹² if present and (d) if R¹² is not present, at least one of the radicals R⁶ and R¹¹ is different from C₂-C₆-alkylcarbonyl, C₂-C₆-alkoxycarbonyl, C₂-C₆-alkylaminocarbonyl and C₃-C₈-dialkylaminocarbonyl, and
20 where the compound of the general formula (I) may also be an N-oxide or salt,

and at least one insecticidally active compound from groups 2 below, selected from

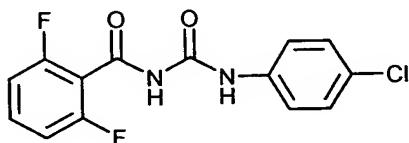
A) benzoylureas, preferably

25 (2-1) chlorfluazuron (known from DE-A 28 18 830)



and/or

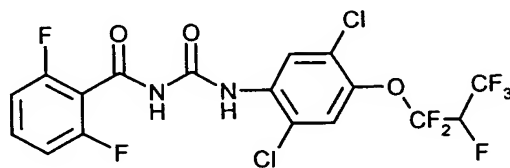
(2-2) diflubenzuron (known from DE-A 21 23 236)



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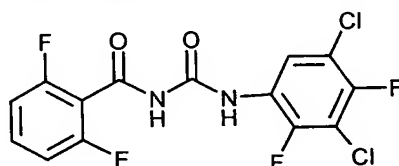
and/or

(2-3) lufenuron (known from EP-A 0 179 022)



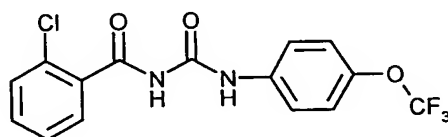
and/or

(2-4) teflubenzuron (known from EP-A 0 052 833)



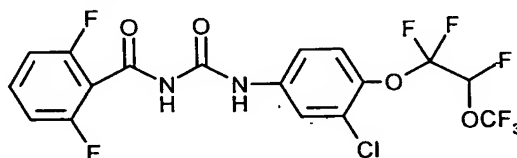
and/or

(2-5) triflumuron (known from DE-A 26 01 780)



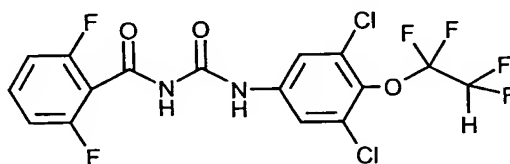
and/or

(2-6) novaluron (known from US 4,980,376)



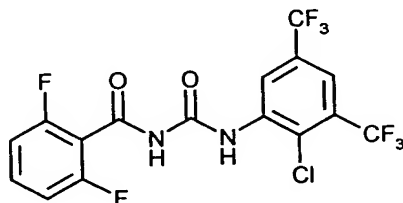
and/or

(2-7) hexaflumuron (known from EP-A 0 071 279)



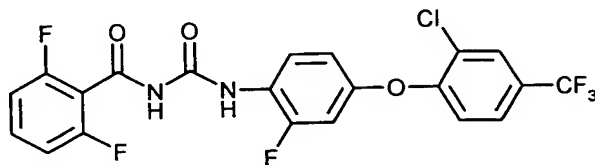
and/or

(2-8) bistrifluoron (DBI-3204) (known from WO 98/00394)



and/or

(2-22) flufenoxuron (known from EP-A 0 161 019)



and/or

B) macrolides, preferably

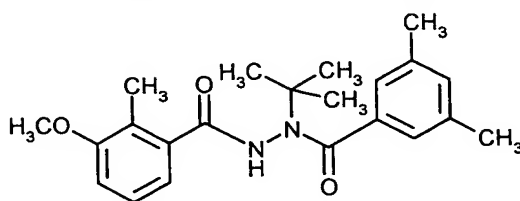
5

(2-9) emamectin (known from EP-A 0 089 202)

and/or

C) diacylhydrazines, preferably

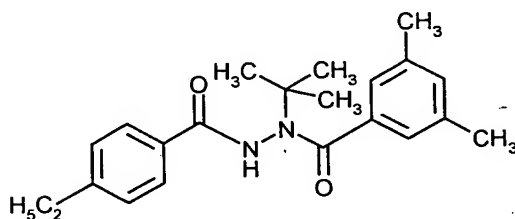
(2-10) methoxyfenozide (known from EP-A 0 639 559)



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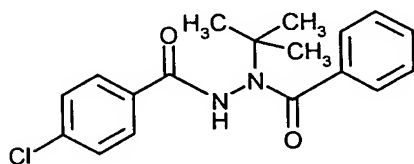
and/or

(2-11) tebufenozide (known from EP-A-339 854)



and/or

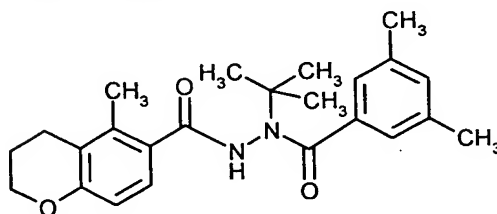
(2-12) halofenozide (known from EP-A 0 228 564)



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and/or

(2-13) chromafenozide (ANS-118) (known from EP-A 0 496 342)



and/or

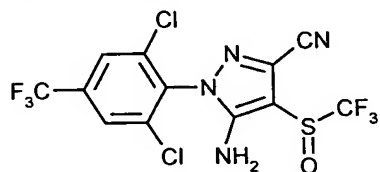
(2-14) *Trichogramma* spp. (known from The Pesticide Manual, 11th Edition, 1997, p. 1236)

and/or

(2-15) *Verticillium lecanii* (known from The Pesticide Manual, 11th Edition, 1997, p. 1266)

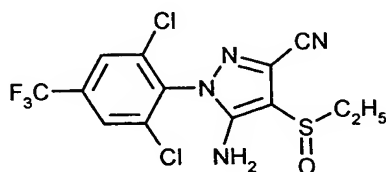
and/or

5 (2-16) fipronil (known from EP-A 0 295 117)



and/or

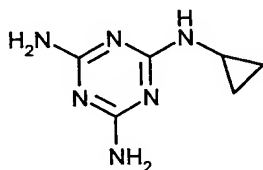
(2-17) ethiprole (known from DE-A 196 53 417)



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and/or

(2-18) cyromazine (known from DE-A 27 36 876)



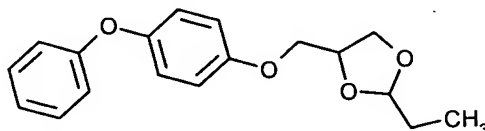
and/or

(2-19) azadirachtin (known from The Pesticide Manual, 11th Edition, 1997, p. 59)

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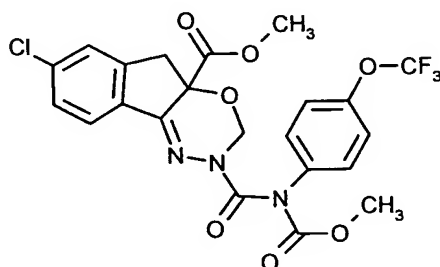
and/or

(2-20) diofenolan (known from DE-A 26 55 910)



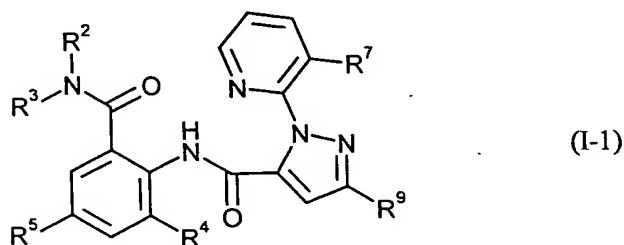
and/or

(2-21) indoxacarb (known from WO 92/11249)



20

2. The composition as claimed in claim 1 comprising at least one active compound from the group of the anthranilamides of the formula (I-1) in which



in which

- 5 R^2 represents hydrogen or C_1 - C_6 -alkyl,
 R^3 represents C_1 - C_6 -alkyl which is optionally substituted by one R^6 ,
 R^4 represents C_1 - C_4 -alkyl, C_1 - C_2 -haloalkyl, C_1 - C_2 -haloalkoxy or halogen,
 R^5 represents hydrogen, C_1 - C_4 -alkyl, C_1 - C_2 -haloalkyl, C_1 - C_2 -haloalkoxy or halogen,
 R^6 represents $-C(=E^2)R^{19}$, $-LC(=E^2)R^{19}$, $-C(=E^2)LR^{19}$ or $-LC(=E^2)LR^{19}$, where each E^2
10 independently of one another represents O, S, $N-R^{15}$, $N-OR^{15}$, $N-N(R^{15})_2$, and each L independently of one another represents O or NR^{18} ,
 R^7 represents C_1 - C_4 -haloalkyl or halogen,
 R^9 represents C_1 - C_2 -haloalkyl, C_1 - C_2 -haloalkoxy, $S(O)_p$ - C_1 - C_2 -haloalkyl or halogen,
 R^{15} in each case independently of one another represents hydrogen or represents in each
15 case optionally substituted C_1 - C_6 -haloalkyl or C_1 - C_6 -alkyl, where the substituents independently of one another may be selected from the group consisting of cyano, C_1 - C_4 -alkoxy, C_1 - C_4 -haloalkoxy, C_1 - C_4 -alkylthio, C_1 - C_4 -alkylsulfinyl, C_1 - C_4 -alkylsulfonyl, C_1 - C_4 -haloalkylthio, C_1 - C_4 -haloalkylsulfinyl and C_1 - C_4 -haloalkylsulfonyl,
 R^{18} in each case represents hydrogen or C_1 - C_4 -alkyl,
 R^{19} in each case independently of one another represents hydrogen or C_1 - C_6 -alkyl,
20 p independently of one another represents 0, 1, 2.

3. The composition as claimed in claim 1 or 2 comprising at least one active compound of group 2 selected from
- (2-5) triflumuron
- (2-22) flufenoxuron
- 5 (2-9) emamectin
- (2-10) methoxyfenozide
- (2-16) fipronil
- (2-17) ethiprole
- (2-21) indoxacarb.
- 10
4. The composition as claimed in claim 1, 2 or 3 comprising anthranilamides of the formula (I) and at least one active compound from group 2 in a ratio of 200:1 to 1:200.
5. The use of a synergistically effective mixture as defined in claim 1, 2, 3 or 4 for controlling
- 15 animal pests.
6. A process for preparing pesticides, characterized in that a synergistically effective mixture as defined in claim 1, 2, 3 or 4 is mixed with extenders and/or surfactants.
- 20 7. A method for controlling animal pests, characterized in that synergistically effective mixtures as defined in claim 1, 2, 3 or 4 are allowed to act on animal pests and/or their habitat.